# Mumbai University

## Question Paper

# December – 2017

## [B.Sc.IT – Semester: VI]
### (IDOL – Revised Course)

- ❖ **Internet Technologies**
- ❖ **Digital Signals and Systems**
- ❖ **Data Warehousing**
- ❖ **Project Management**

# Kamal T Universe

# Mumbai University

# [IDOL – Revised Course]
# (December – 2017)

# PAPER - I

# Internet Technologies

**Time:** 3 Hours                                                                                                    **Total Marks:** 100

**N.B.: (1)** *All Question are Compulsory.*
    **(2)** *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
    **(3)** *Answer To The Same Question Must Be Written Together.*
    **(4)** *Number To The Right Indicates Marks.*
    **(5)** *Draw Neat Labeled Diagrams Wherever Necessary.*
    **(6)** *Use of Non – Programmable Calculator is allowed.*

**Q.1  ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

**(A)** Explain Output Module of TCP. (5)
**(B)** Write a note on Timers available in RIP. (5)
**(C)** Explain Class Full Addressing. (5)
**(D)** Explain IPv6 Base Header Format. (5)

**Q.2  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Write a note on NAT (Network Address Translation) (5)
**(B)** Explain role of Presentation Layer. (5)
**(C)** Explain Supernetting with example. (5)
**(D)** State and explain Reassembly Module of IP Package. (5)
**(E)** Explain strategies for Transmission from IPv4 to IPv6. (5)
**(F)** Explain Unicast, Anycast and Multicast Address in IPv6. (5)

**Q.3  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Explain Cache Control Module of ARP. (5)
**(B)** List and Explain Error Reporting Messages of ICMP. (5)
**(C)** Explain role of Foreign Agent and Home Agent in Mobile IP. (5)
**(D)** Explain the concept of Path Vector Routing. (5)
**(E)** Explain Two-Node Instability in RIP. (5)
**(F)** Explain various types of Links in OSPF. (5)

**Q.4  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** State and explain features of UDP. (5)
**(B)** Write and Explain Pseudo Code of Control-Block Module and Output Module of UDP. (5)
**(C)** Draw and explain TCP Segment Format. (5)
**(D)** Draw and explain Client State Transition diagram of TCP. (5)
**(E)** State and explain Services of SCTP. (5)
**(F)** Explain INIT Chunk of SCTP. (5)

**Q.5  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Draw and explain DHCP Packet Format. (5)
**(B)** Explain Generic, Country and the Inverse Domain. (5)
**(C)** Explain the concept of NVT and NVT Character Set. (5)
**(D)** Explain in brief Components of SSH. (5)
**(E)** Explain in brief Communication Over Control Connection & Data Connection in FTP. (5)
**(F)** Explain different Messages of TFTP. (5)

**[TURN OVER]**

**Q.6  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Explain in detail Hypertext and Hyper Media, Web Client(browser), Webserver, Uniform Resource Locator. **(5)**

**(B)** Explain Persistence and Nonpersistent Connection of HTTP. **(5)**

**(C)** Write a note on Message Transfer Agent of Email System. **(5)**

**(D)** Explain in detail the role of POP3 and IMAP4 in Email System. **(5)**

**(E)** Explain various Data Types and Subtypes in MIME. **(5)**

**(F)** Write a note on Audio Compression. **(5)**

**Q.7  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Explain in detail constructors used to create DatagramSocket. **(5)**

**(B)** Write TCP socket program that will display whether a number is a prime or not. **(5)**

**(C)** Explain Socket class with its methods and properties. **(5)**

**(D)** Explain how UDP Socket Programming works? **(5)**

**(E)** Write UDP socket program that will display number of vowels in a string. **(5)**

**(F)** Write a Client/server application where a client contacts the server to obtain random number. Use Socket and Server Socket. **(5)**

# Mumbai University

# [IDOL – Revised Course]
# (December – 2017)

# PAPER - II

# Digital

# Signals and Systems

**Time:** 3 Hours             **Total Marks:** 100

**N.B.: (1)** *All Question are Compulsory.*
    **(2)** *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
    **(3)** *Answer To The Same Question Must Be Written Together.*
    **(4)** *Number To The Right Indicates Marks.*
    **(5)** *Draw Neat Labeled Diagrams Wherever Necessary.*
    **(6)** *Use of Non – Programmable Calculator is allowed.*

**Q.1**    **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

**(A)**    What are the advantages of Digital Signal Processing (DSP) over Analog Signal Processing (ASP)?    **(5)**

**(B)**    What is Region of Convergence?    **(5)**

**(C)**    With reference to z-Transform, State and the Initial and Final Value Theorem.    **(5)**

**(D)**    Define the terms:    **(5)**
    **(i)** *Linearity*
    **(ii)** *Causality*

**Q.2**    **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**    Define & give the Graphical representation of Unit step and Unit Impulse.    **(5)**

**(B)**    Discuss the classification of systems.    **(5)**

**(C)**    Draw and explain the block diagram of an Analog-To-Digital Converter.    **(5)**

**(D)**    What is meant by Sampling? State Sampling Theorem.    **(5)**

**(E)**    What is meant by Quantisation and Encoding?    **(5)**

**(F)**    Write a note on Dirichlet's Conditions.    **(5)**

**Q.3**    **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**    Find the Laplace Transform of Cosine Function.    **(5)**

**(B)**    Find Laplace transform of the periodic sawtooth waveform with period of one cycle T.    **(5)**

**(C)**    State any five properties of Laplace transform.    **(5)**

**(D)**    Define the network transfer function & explain how to obtain output impulse & step response using transfer function.    **(5)**

**(E)**    State and explain Laplace Transform and its inverse transform.    **(5)**

**(F)**    Obtain Laplace transform for step and Impulse Responses of Series R-L Circuit.    **(5)**

**Q.4**    **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**    Define z-Transform. Explain the use of z-Transform.    **(5)**

**(B)**    Compare the properties of two-sided z-transform with those of one-sided z-Transform.    **(5)**

**(C)**    What is the condition for z-Transform to exist?    **(5)**

**(D)**    Obtain the Z-Transform of $x(n) = n^2 u(n)$.    **(5)**

**(E)**    How is z-Transform obtained from Laplace Transform?    **(5)**

**(F)**    State and explain the properties of z-Transform.    **(5)**

**Q.5**    **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**    Simple problems to check the Linearity and Causality of the signals.    **(5)**

**(B)**    Explain briefly the Paley-Wiener Criterion.    **(5)**

**(C)**    Explain stability in Linear Time Invariant System. What is the condiction for a System to be BIBO Stable?    **(5)**

**(D)**    What is Convolution? What are the properties of Convolution?    **(5)**

**(E)**    What is Frequency Response? What are the properties of frequency response?    **(5)**

**(F)**    Check whether the system $F[x(n)] = n[x(n)]^2$ is Linear and Time-Variant.    **(5)**

**[TURN OVER]**

**Q.6  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Explain any 5 properties of DFT.  **(5)**

**(B)**  State and explain the properties of Discrete Fourier Series.  **(5)**

**(C)**  Define Discrete Fourier Transform (DFT) for a sequence x(n)  **(5)**

**(D)**  What are the methods used to perform Fast Convolution. Explain any one method giving all the steps involved to perform Fast Convolution.  **(5)**

**(E)**  Compute Linear and Circular Periodic Convolutions of the sequence x1(n)= {1,1,2,2} and x2(n)= {1,2,3,4} using DFT.  **(5)**

**(F)**  State the relationship between DFT and z-Transform.  **(5)**


**Q.7  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Explain the effects of Windowing. Define Rectangular and Hamming Window Functions.  **(5)**

**(B)**  Describe the Inverse Chebyshev Filters.  **(5)**

**(C)**  Obtain the system functions of normalized Butterworth filters for order N = 1 & 2.  **(5)**

**(D)**  State the advantages of Digital Filters.  **(5)**

**(E)**  Describe Elliptical Filters in detail.  **(5)**

**(F)**  Explain the procedure for Designing an FIR Filter using Kaiser Window.  **(5)**

# Mumbai University

# [IDOL – REVISED COURSE]
# (DECEMBER – 2017)

# PAPER - III

# DATA

# WAREHOUSING

**Time:** 3 Hours                                                                 **Total Marks:** 100

N.B.: **(1)** *All Question are Compulsory.*
       **(2)** *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
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       **(5)** *Draw Neat Labeled Diagrams Wherever Necessary.*
       **(6)** *Use of Non – Programmable Calculator is allowed.*

**Q.1 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

**(A)** What is Data Warehouse?      **(5)**
**(B)** Write a short note on Information Quality Management.      **(5)**
**(C)** Briefly explain Business Analyst Perspective.      **(5)**
**(D)** What is Data Warehouse? List and explain the characteristics of Data Warehouse.      **(5)**

**Q.2 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Differentiate between Operational System and Informational System.      **(5)**
**(B)** List and explain the characteristics of Data Warehouse.      **(5)**
**(C)** Write a short note on Integrated Sector.      **(5)**
**(D)** What are Data Marts?      **(5)**
**(E)** What are Components of Data Warehouse Environment?      **(5)**
**(F)** Explain Evolution of Data Warehouse from the Business Perspective.      **(5)**

**Q.3 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Write a short note on Corporate Data Model.      **(5)**
**(B)** Briefly explain Peak Period Processing.      **(5)**
**(C)** Write a short note on Firewall.      **(5)**
**(D)** Write a short note on Dormant Data.      **(5)**
**(E)** How to Monitor Data Quality?      **(5)**
**(F)** What is a Summarized Data?      **(5)**

**Q.4 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Write a short note on Corporate Data Model.      **(5)**
**(B)** Briefly explain Peak Period Processing.      **(5)**
**(C)** Write a short note on Firewall.      **(5)**
**(D)** Write a short note on Dormant Data.      **(5)**
**(E)** How to Monitor Data Quality?      **(5)**
**(F)** What is a Summarized Data?      **(5)**

**Q.5 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)** Explain in brief Continuous Time Span Data.      **(5)**
**(B)** Write a short note on Non-Overlapping Records.      **(5)**
**(C)** Explain throughput with respect to ETL.      **(5)**
**(D)** Explain ETL in Online Mode.      **(5)**
**(E)** Explain how Data Flows into Integrated Sector.      **(5)**
**(F)** Write a short note on ETL Mapping.      **(5)**

**[TURN OVER]**

**MUMBAI UNIVERSITY**

**QUESTION PAPER**

**DATA WAREHOUSING**

(DECEMBER – 2017 | REVISED COURSE)

**B.Sc.IT**

(SEMESTER – VI)

**Q.6 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A) What are functions of Granularity Manager? **(5)**

(B) Write a short note on Filtering Data. **(5)**

(C) How Transaction Processing can be Parallelized? **(5)**

(D) Define Online Response Time. **(5)**

(E) Write a short note on Building the Metadata Infrastructure. **(5)**

(F) Write a short note on workload Management. **(5)**

**Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A) Write a short note on need of Data Warehouse. **(5)**

(B) How DW is implemented on Database Systems? **(5)**

(C) How data is deployed in Data Warehouse? **(5)**

(D) Explain maintenance of Data Warehouse. **(5)**

(E) Explain in brief Physical Design Process. **(5)**

(F) Write a short note on growth of DW. **(5)**

# Mumbai University

# [IDOL – Revised Course]
# (December – 2017)

# Paper - IV
## Elective

# Project Management

**Time:** 3 Hours                                                                                            **Total Marks:** 100

N.B.: **(1)** *All Question are Compulsory.*
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    **(4)** *Number To The Right Indicates Marks.*
    **(5)** *Draw Neat Labeled Diagrams Wherever Necessary.*
    **(6)** *Use of Non – Programmable Calculator is allowed.*

**Q.1     ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

**(A)**  Write note on Pragmatic Software Cost Estimation.                                              **(5)**
**(B)**  Explain the Principles of Modern Software Management.                                     **(5)**
**(C)**  What is Iteration? Explain the Sequence of an Individual Iteration Workflow.       **(5)**
**(D)**  Explain the Roles, Artifacts and Responsibilities of Software Architecture Team.  **(5)**

**Q.2     ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  What kind of strategies can be applied to improve Team Effectiveness?              **(5)**
**(B)**  Explain the Generations of Software Development.                                              **(5)**
**(C)**  What are the Strategies to make Error Free Software?                                          **(5)**
**(D)**  Present the Boehm's Top-10 Software Metrics list in detail.                                  **(5)**
**(E)**  Explain how to reduce the Software Product Size.                                               **(5)**
**(F)**  Explain the Three Generations of Software Development.                                    **(5)**

**Q.3     ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Explain the Principles of Conventional Software Management.                            **(5)**
**(B)**  Explain any five Davi's Principles of Conventional Software Management.           **(5)**
**(C)**  Briefly explain the Management Artifact Sets.                                                     **(5)**
**(D)**  What is an Artifact Set? What are the different types of Artifact Sets?               **(5)**
**(E)**  Explain the different stages in Modern Software Development Process?              **(5)**
**(F)**  Write note on Aspects of Architecture from the Management Perspective.          **(5)**

**Q.4     ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Explain Two Planning Guidelines.                                                                       **(5)**
**(B)**  Explain the Evolution of Work Breakdown Structure.                                          **(5)**
**(C)**  Write short note on Periodic Status Assessment.                                                **(5)**
**(D)**  Discuss the Cost and Schedule Estimating Process.                                            **(5)**
**(E)**  Explain the Significance of Periodic Status Assessment.                                      **(5)**
**(F)**  What is a Workflow? List and explain the Software Process Workflows.               **(5)**

**Q.5     ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Write a note on Process Automation.                                                                  **(5)**
**(B)**  Write note on Software Change Orders (SCO).                                                    **(5)**
**(C)**  Explain the role of Infrastructure in Process Automation.                                    **(5)**
**(D)**  Explain the Environment Disciplines of Environment Evolution.                            **(5)**
**(E)**  Write note on Round Trip Engineering.                                                              **(5)**
**(F)**  Explain the features of Project Organizations.                                                    **(5)**

**[TURN OVER]**

**Q.6  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  Describe the Metrics for Project Control and Process Instrumentation.  **(5)**
**(B)**  Write a note on Management Indicators.  **(5)**
**(C)**  List the basic characteristics of Good Metric.  **(5)**
**(D)**  Give the comparison between Small-Scale and Large-Scale Projects.  **(5)**
**(E)**  Explain the process discriminators resulting from differences in Project Size.  **(5)**
**(F)**  Explain the Automation Process with neat diagram.  **(5)**

**Q.7  ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

**(A)**  How the Project Profiles differ between a Conventional Approach and Modern Process?  **(5)**
**(B)**  What is early Risk Resolution? Give its advantages.  **(5)**
**(C)**  State the Traits of Modern Process Development.  **(5)**
**(D)**  Write a note on Modern Software Economics.  **(5)**
**(E)**  Explain the General Structure for Cost Estimation Model for Modern Software Process.  **(5)**
**(F)**  Enlist the various principles of Modern Project Management.  **(5)**